

CLAIMS

1. A crash box comprising:
5 an outer hollow member; and
an internal member slideably mounted within the outer hollow member, said internal member being provided with compression reducing arms extending towards the internal surface of the outer hollow member.
- 10 2. A crash box according to claim 1 wherein the compression reducing arms are provided with expandable material at their extremities adjacent to the inner surface of the hollow external member.
- 15 3. A crash box according to claim 2 wherein the expandable material is a structural adhesive foam.
- 20 4. A crash box according to claim 3 wherein the expandable material is selected so that it will foam under the conditions into which the vehicle frame is subjected in the e coat oven.
- 25 5. A crash box according to claim 2 wherein spacers are provided to hold the internal member away from the internal surface of the external member to allow the anticorrosion fluid to contact, substantially the entire internal surface of the external member.
- 30 6. A crash box according to claim 5 in which the spacers are provided on the internal member.
7. A crash box according to claim 2 wherein the external hollow member is cylindrical, hexagonal, rectangular or square in cross section.
8. A crash box according to claim 2 wherein the external hollow member is made of metal.
- 35 9. A crash box according to claim 2 wherein the external hollow member is made of rigid plastic material such as polypropylene, or nylon, optionally filled.

10. A crash box according to claim 2 wherein the internal member is made of metal.

5 11. A crash box according to claim 2 wherein the internal member is made of rigid thermoplastic material such as polypropylene, nylon or glass filled nylon.

12. A crash box according to claim 2 wherein the foamable material is attached to the extremity of the compression reducing arms by push pins.

10 13. A crash box according to claim 12 in which the push pins act as spacers between the extremities of the compression reducing arms and the external hollow member.

15 14. A crash box according to claim 2 wherein the inner member is shorter than the outer hollow member.

15. A crash box according to claim 14 wherein the inner member is shorter by from 1 centimeter to 10 centimeters.

20 16. A crash box comprising:
an outer hollow member; and
an internal member slideably mounted within the outer hollow member, said internal member being provided with compression reducing arms extending towards the internal surface of the outer hollow member, wherein:

25 i. the compression reducing arms are provided with expandable material at their extremities adjacent to the inner surface of the hollow external member;

ii. the expandable material is a structural adhesive foam;

30 iii. the expandable material is selected so that it will foam under the conditions into which the vehicle frame is subjected in the e coat oven;

iv. the external hollow member is cylindrical, hexagonal, rectangular or square in cross section;

v. the inner member is shorter than the outer hollow member by from 1 centimeter to 10 centimeters;

35 spacers holding the internal member away from the internal surface of the external member to allow anticorrosion fluid to contact substantially the entire internal

surface of the external member wherein the spacers are provided on the internal member.

5 17. A crash box according to claim 16 wherein the external hollow member is made of metal or a rigid plastic material such as polypropylene, or nylon, optionally filled.

10 18. A crash box according to claim 16 wherein the internal member is made of metal or a rigid thermoplastic material such as polypropylene, nylon or glass filled nylon.

 19. A crash box according to claim 16 wherein the foamable material is attached to the extremity of the compression reducing arms by push pins.

15 20. A crash box according to claim 19 in which the push pins act as spacers between the extremities of the compression reducing arms and the external hollow member.

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